

Primula et Omphalogramma:
Diagnoses Specierum Novarum.

BY

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Primula adenantha, Balf. f. et Cooper.

Parva rosulata foliis floribusque coactaneis. Folia petiolata ad 6.5 cm. longa; lamina papyracea oblongo-ovalis ad 4 cm. longa 1.4 cm. lata, obtusa, margine irregulariter dentata dentibus acutis minute ciliatis, basim versus attenuata; utrinque concolor subrugulosa pilis articulatis dense vestita, subtus costa media et venis primariis hirsutis; petiolus circ. 2 cm. longus anguste alatus dense hirsutus. Scapus strictus erectus ad 20 cm. altus pubescens efarinosus capitulum florum sessilium nutantium sphaericum gerens; bracteae inferiores ligulatae acutae saepe apice denticulatae sparsim glanduloso-pilosae; anthopodium nullum. Calyx parvus campanulatus paullo ventricosus deflexus circ. 4 mm. longus extus pilis glanduliferis farinipotentibus conspersus, intus dense albo-farinosis ad medium 5-lobatus; lobi inaequales glanduloso-ciliati. Corolla tubulosa caerulea circ. 1.4 cm. longa extus glanduloso-puberula; tubus circ. 9 mm. longus vel in flore longistylus brevior; limbus infundibuliformis intus sparsissime glanduloso-puberulus; lobi circ. 3 mm. longi imbricati rotundati vel ovales paullo emarginati. Stamina in

flore longistyo paullo exserta, in brevistylo infra medium tubi corollini inserta. Ovarium globosum operculo crustaceo coronatum; stylus longus exsertus, brevis calycom subaequans; stigma discoideum. Capsula ovoidea ex calyce persistente exserta, valvis 5 angustis dehiscens; placenta ovoidea fere sessilis. Species Sectionis Muscarioidis.

Bhutan. Singshi Timpu. Cooper. 1601. 20th July 1914.

Primula Agleniana, Balf. f. et Forrest.

Planta magnifica bulbosa ad 3 dm. alta. Folia ad 20 cm. longa (petiolo inclusus); lamina lanceolata acuta deorsum in petiolum fere duplo longiorum attenuata grosse dentato-crenulata nunc subincisa subitus lacteo-farinosa. Scapus ad 3-florus leviter lacteo-farinosis; bracteae circ. 1 cm. longae; pedicelli nutantes ad 3.5 cm. longi. Calyx pallide viridis foliaceus utrinque lacteo-farinosis. Corollae limbus flavidus aurantiaco-oculatus ad 4 cm. diam. extus plus minusve farinosus. Species ex affinitate *P. callianthae*, Franch.

S.E. Tibet. Tsarong; Salween—Kiu-chiang divide. Forrest. 18,875. July 1919.

Primula amabilis, Balf. f. et Forrest.

Nana albido-farinosa caespitosa ad 6 cm. alta. Folia linearis-spathulata longe petiolata; lamina ad 2 cm. longa 4 mm. lata grosse dentata. Scapus rarius foliis longiori umbellam 2-4-floram gerens; bracteae a basi lata subulatae atropurpureae pedicellos ad 4 mm. longos superantes. Calyx atropurpureus ad medium fissus; lobi ad 7 mm. longi acuti tubum corollinum fere aequantes. Corolla saturate purpurea griseo-oculata. Capsula ad 1 cm. longa pedicello ad 2 cm. aucto. Sectionis Nivalis *P. petraeae*, Balf. f. et Forrest, affinis.

S.E. Tibet. Tsarong; Salween—Kiu-chiang divide. Forrest. 18,897. June 1919.

Primula apocrita, Balf. f. et Forrest.

Rosulata foliis floribusque coaetaneis, perulis paucis vel nullis sub anthesi persistentibus. Folia papyracea circ. 5 cm. longa oblongo-spathulata in petiolum alatum pilosum attenuata; lamina circ. 1.5 cm. lata oblonga vel ovalis apice rotundata margine regulariter dentato-serrata plus minusve ciliata; supra pallide viridis pilis brevibus albidis conspersa; subitus glabra laevis ad venas pilosa. Scapus tenuis ad 16 cm. longus plus minusve flavidio-farinosis deorsum glabrescens spicam florum sessilium patentium fragrantium parvam gerens; bracteae occultae linearis-lanceolatae vel lanceolatae acuminatae farinosae et glandulosi-ciliatae. Calyx cupularis circ. 3 mm. longus

flavido-farinosis ad medium in lobos inaequales fissus. Corolla saturate purpureo-caerulea tubulosa ; tubus circ. 1.4 cm. longus extus pilis farinipotentibus conspersus intus glaber rugulosus ; limbus concavus circ. 4 mm. longus intus farina conspersus ; lobi ovales vel obovales circ. 2.5 mm. longi minutissime retusi. Stamina floris brevistylis ad os tubi corollini inserta, longistylis basim tubi corollini versus calycem aequantia ; filamenta brevissima ; antherae flavae circ. .75 mm. longae. Ovarium globosum operculo crustaceo lobulato coronatum ; stylus brevis calyce dimidio brevior, longus tubo corollino brevior ; stigma latum discoideum. Species Sectionis Muscarioidis.

S.E. Tibet. Tsarong. Ka-gwr-pw. Forrest. 14,201.
July 1917.

Primula atricapilla, Balf. f. et Cooper.

Rosulata foliis floribusque coactaneis basi alabastri perulis cincta. Folia petiolata ad 5 cm. longa ; lamina papyracea oblongo-ovalis 2-3 cm. longa, 1 cm. lata, obtusa vel apice rotundata, margine subrecurva breviter crenulato-dentata vel suberosa glanduloso-ciliata, basi in petiolum aequilongum vel paullo breviorem attenuata, efarinosa ; utrinque opaca fere concolor pilis glandulosis subscabriuscula ; subtus costa media dense pilosa ; petiolum glandulosi-pilosus. Scapus ad 12 cm. longus (sub fructu auctus) breviter glandulosi-puberulus efarinosus capitulum atricapillatum florum deflexorum gerens ; bracteae inferiores ligulatae obtusae deflexae, superiores atropurpureae erectae. Calyx cupularis subventricosus deflexus circ. 5 cm. longus ad medium vel ultra 5-lobatus ; lobi inaequales (posteriore maximo elliptico truncato denticulato) glandulosi-ciliati utrinque sparsim glandulosi-pilosae saepe farinosi. Corolla caerulea circ. 1.3 cm. longa ; tubus cylindricus subangulatus in flore brevistylis circ. 9 mm. longus extus glaber in longistylis circ. 7 mm. longus ; limbus infundibuliformis circ. 4 mm. longus intus sparsim glandulosi-puberulus ; lobi erecto-patentes imbricati cuneati emarginati segmentis integris. Stamina in flore longistylis ad faucem corollinam inserta, in brevistylis ad medium tubi. Ovarium globosum ; stylus longus corollae tubum subaequans, brevis calyce paullo longior ; stigma discoideum depresso. Species Sectionis Muscarioidis.

Tibet. Philé-la. Cooper. 1771. 23rd July 1914.

Primula atuntzuensis, Balf. f. et Forrest.

Parva luteo-farinosa ad 7 cm. alta. Folia ad 4 cm. longa ; lamina anguste obovalis ad 6 mm. lata acutiuscula in petiolum discretum aequilongum angustata dentato-crenulata. Scapus foliis duplo longior umbellam 2-3-floram gerens ; bracteae

purpureae a basi lata lanceolatae pedicellos aequantes vel subaequantes; pedicelli circ. 6 cm. longi. Calyx atropurpureus; lobi oblongi acuti. Corollae purpureo-cyanæae tubus calycem duplo superans. Capsula circ. 1 cm. longa 2.5 mm. diam. pedicellis ad 1 cm. auctis. Species Sectionis Nivalis ex affinitate *P. petraeae*, Balf. f. et Forrest.

Western N.W. Yunnan. Mts. north of Atuntzu. Forrest. 13,986. June 1917.

Primula boreio-calliantha, Balf. f. et Forrest.

Lacteo-farinosa. Foliorum lamina lanceolata apice attenuata regulariter et minute crenulata. Scapus crassus folia dimidio superans umbellam secundam 2-3-floram gerens. Calyx circ. ad medium fissus; lobi ovati. Corollæ limbus imbricatus. Species Sectionis Nivalis ex phylo *P. callianthæ*, Franch.

Eastern N.W. Yunnan. Mts. of Chungtien plateau. Forrest. 12,571. June 1914.

Primula burmanica, Balf. f. et Ward.

Robusta paludicola. Folia oblanceolata ad 30 cm. longa 5 cm. lata apice rotundata eroso-dentata deorsum in petiolum longum alatum attenuata plus minusve rugulosa erarinosa sed pilis farinipotentibus conspersa. Scapus crassus ad 60 cm. altus pilis farinipotentibus puberulus umbellam terminalem ad 16-floram et verticillos ad 6 inter se distantes gerens; bractæ virides lineari-subulatae pedicellos recurvos ad 2 cm. longos puberulos superantes. Calyx viridis circ. 1.2 cm. longus intus albo-farinosis extus glanduloso-puberulus; lobi acuminati subulati. Corollæ rubro-purpureæ aurantiaco-oculatae tubus calycem superans annulatus; limbus circ. 1.4 cm. longus planus, lobi obcordati integri vel crenulati emarginati. Species *P. mallophylo*, Balf. f. Sectionis Candelabrae valde affinis.

E. Upper Burma. Below Feng-shui-ling. F. Kingdon Ward. 1634. 5th June 1914.

Primula bryophila, Balf. f. et Farrer.

Luteo-farinosa rosulata. Rhizoma parvum sub anthesi ad collum squamis alabastri vestitum. Folia subligulata ad 15 cm. longa acuta deorsum in petiolum alatum vaginatum vix discretum attenuata margine recurva subtus dense luteo-farinosa. Scapus tenuis circ. 8 cm. longus glaber umbellam 2-3-floram gerens; bractæ parvae ovatae membranaceæ glabrae; pedicelli filiformes glabri divergentes. Calyx cupulari-campanulatus circ. 6 mm. longus ultra medium 5-lobatus tubo angulato glaber sinibus inter lobos dense luteofarinosis exceptis; lobi lanceolati circ. 4 mm. longi. Corollæ plus minusve purpureae tubus

infundibuliformis annulatus intus puberulus extus glaber; limbi discus puberulus, lobi subcuneati aperti circ. 6.5 mm. longi. Stamina in flore longistylo supra medium tubi corollini inserta calycem excedentia. Ovarium ovoideum; stylus longus corollae tubum aequans. Species Sectionis Nivalis ex phyllo *P. calliantha*, Franch.

N.E. Upper Burma. Hpimaw Pass. Farrer and Cox. 880. 6th May 1919.

Primula calcicola, Balf. f. et Forrest.

Caespitosa parva calcicola luteo-farinosa foliis praeteritis sub rosula dense vestita. Folia petiolata tenuia ovali-spathulata ad 3 cm. longa 6 mm. lata rotundato-obtusa minute denticulata deorsum in petiolum lamina longiore attenuata; supra laete viridia; subtus luteo-farinosa. Scapus fragilis filiformis folia paullo superans uniflorus apicem versus bracteas duas minutus inaequales gerens; pedicelli circ. 4 mm. longi. Calyx viridis 5-nervius ad medium fissus; lobi a basi lanceolati sub-acuminati semipatentes utrinque luteo-farinosi. Corolla roseo-purpurea? circ. 1.5 cm. longa. Species Sectionis Yunnanensis.

S.W. Szechwan. Mu-li. Forrest. 16,820. Aug. 1918.

Primula carnosula, Balf. f. et Forrest.

Parva epilosa rosulata. Folia carnosula erecta petiolato-spathulata ad 5 cm. longa regione laminari nunc orbiculari nunc ovali nunc rhomboidea integra vel minute dentata vel crenulata laete viridi subtus pallidiore utrinque obscure pulverulenta. Scapus validus ad 9 cm. longus pulverulentus superne leviter albo-farinosis umbellam 3-5-floram flore fragrante gerens; bracteae lanceolatae basi incrassatae ad 7 mm. longae pedicellos albo-farinosos superantes intus albo-farinosae. Calyx purpureus pulverulentus intus albo-farinosus ad medium fissus; lobi obtusi. Corollae ad 1.5 cm. longae tubus flavidus exannulatus calycem fere duplo superans; limbus ad 6 mm. longus intense purpureo-lilacinus; lobi bilobulati. Genitalia longiora ad os tubi corollini. Species ex affinitate *P. gemmiferae*, Batalin.

N.W. Yunnan. On the Bei-ma-shan. Forrest. 14,030. June 1917.

Primula chrysophylla, Balf. f. et Forrest.

Pulvinata semperviridis circ. 7 cm. alta; rami plurimi tenues basi radicantes e radicis vertice radiantes foliis scapisque praeteritis siccis dense obtecti. Folia petiolata ad 4 cm. longa saepius minora; lamina coriacea ovalis vel ovata vel oblongo-ovata vel elliptica nunc rotundata vel cordata ad 2 cm. longa 1.3 cm. lata margine recurvata crenulata vel undulata, basi abrupte contracta;

supra opaca viridis glandulis farinipotentibus conspersa ; subtus dense aureo-farinosa ; petiolus late alatus 2-4 mm. latus laminam aequans nunc ea longior vel brevior. Scapus terminalis sed lateraliter translatus aureo-farinosis ad 7 cm. longus infra inflorescentiam capituliformem 3-floram arcuatus ; bracteae fertiles involucrae atropurpureae aureo-farinosae, extimae tribulatae. Flores secundi. Calyx campanulatus tubum corollinum fere aequans ad medium fissus plus minusve aureo-farinosis. Corolla saturate purpureo-rosea flavidoculata ; tubus intus rugulosus in flore longistyllo circ. 3 mm. longus ; limbus concavus ; lobi cuneati circ. 8 mm. longi bifidi. Stamina in flore longistyllo infra medium tubi corollini inserta, in flore brevistyllo supra medium. Ovarium globosum operculatum ; stylus longus calycem fere aequans. Capsula calyce paullo aucto inclusa. Species Sectionis Dryadifoliae.

S.W. Szechwan. Mu-li Mts. Forrest. 16,594. Aug. 1914.

Primula chungensis, Balf. f. et Ward.

Rhizoma parvum. Folia petiolata sub anthesi circ. 8 cm. longa plus minusve erecta ; lamina oblongo-ovalis ad 3 cm. lata late crenulata deorsum in petiolum late alatum breviorem attenuata efarinosa sed pilis farinipotentibus conspersa. Scapus robustus ad 48 cm. longus umbellam terminalem 4-8-floram et verticillos ad 4 inter se distantes gerens ad nodos albo-farinosis. Flos fragrans ; bracteae breves albo-farinosae ; pedicelli circ. 1 cm. longi sub fructu aucti. Calyx campanulatus circ. 5 mm. longus plerumque efarinosis. Corollae aureae tubus annulatus circ. 1.3 cm. longus ; lobi aperti circ. 6 mm. longi obcordati. Species Sectionis Candelabrum forsan ad *P. Cockburnianam*, Hemsl. spectans.

N.W. Yunnan. Chung Valley. Sha-ka-la. F. K. Ward. 259. May 1913.

Primula cyanantha, Balf. f. et Forrest.

Rosulata foliis floribusque coaetaneis. Folia petiolata sub anthesi ad 14 cm. longa ; lamina papyracea oblongo-ovalis ad 12 cm. longa 5 cm. lata, apice rotundata et cum margine inaequaliter dentato vel crenato vel dentato-lobulato ciliata, basi in petiolum alatum circ. 2 cm. longum attenuata ; supra pallide viridis pilis paucis articulatis conspersa ; subtus glauca laevis pilis mollibus paucis praedita, costa media venisque primariis hirsutis. Scapus ad 30 cm. longus validus plus minusve luteofarinosis spicam saepe 3 cm. longam multifloram (floribus sessilibus deflexis fragrantibus) crista apicali florum juvenilium et bractearum purpurearum coronatam gerens ; bracteae inferiores deflexae lineari-lanceolatae acuminatae virides ; antho-

podium nullum. Calyx cupularis ventricosus luteo-farinosis circ. 5 mm. longus, ultra medium 5-lobatus; lobi inaequales glanduloso-ciliati. Corolla intense cyanea tubulosa circ. 1.4 cm. longa, extus sparsim luteo-farinosa, intra tubum glabra; limbus infundibularis intus farinosus; lobi circ. 2 mm. longi obovati vel subquadri paulo emarginati. Stamina in flore brevistylo ad faucem tubi corollini inserta antheris tubo brevioribus, in flore longistylo infra medium tubi inserta calyce breviora. Ovarium globosum operculo coronatum; stylus brevis basim antherarum attingens, longus corollae tubo dimidio brevior; stigma latum discoideum. Species speciosa Sectionis Muscarioidis.

S.E. Tibet. Tsarong. Ka-gwr-pw. Forrest. 14,366. July 1917.

Primula cyanocephala, Balf. f.

Epilosa floribus praecocibus. Folia rosulata alabastri squamis rufis coriaceis circumcincta sub anthesi ad 10 cm. longa ad 2.5 cm. lata membranacea oblongo-obovata vel suboblate obtusa margine sinuata obscure denticulata deorsum in petiolum late alatum attenuata, juvenilia utrinque plus minusve pubescentia, adulta supra glabrescentia venis primariis a costa media lata brunnea prominula fere patulim excurrentibus. Scapus robustus ad 20 cm. altus glaber apicem versus dense albo-farinosis umbellam globosam dense multifloram gerens; bracteae membranaceae plus minusve albo-farinosae exteriore ovato-oblongae caudatae 7 mm. longae basi ampliatae pedicellos cucullatim circumvaginantes fere auriculatae infra gibbosae; pedicelli ad 5 mm. longi bracteis breviores validi plus minusve farinosi. Calyx membranaceus plus minusve farinosus 1 cm. longus breviter campanulatus ultra medium fissus; lobi linear-ligulati obtusi hydathodo apicali inconspicuo. Corollae limbus intense purpureus luteo-oculatus; tubus erubescens cylindricus supra paulo ampliatus, extus plus minusve farinosus, intus supra stama tenuiter transverse rugosus exannulatus; lobi ex parte integra limbi (vix 1 mm. lata) orientes ad 7 mm. longi 7 mm. lati obovati profunde bipartiti. Floris brevistyli stama infra os tubi corollini inserta antherarum apicibus ab ore 2 mm. remotis, filamentis brevissimis, antheris elongatis 2 mm. longis, longistyli ad basim tubi corollini inserta apicibus antherarum ab ore 6 mm. remotis. Ovarium discoideum superne incrassatum; stylus longus tenuis ruber calyce longior corolla triente brevior; brevis vix calycis tubum aequans ruber; stigma magnum cylindricum lobulatum. Species speciosa ex phyle *P. denticulatae*, Sm.

E. Yunnan. Tong Tchouan. Maire. April.

Primula cycliophylla, Balf. f. et Farrer.

Caespitosa flavidio-farinosa ramis prostratis patentibus brevibus. Folia circ. 1.5 cm. longa; lamina orbicularis petiolum paullo superans. Scapus tenuis circ. 2 cm. longus 2-florus floribus subsecundis parvis vix 1.5 cm. diam.; corolla pallide roseo-kermesina. Species Sectionis Dryadifoliae.

N.E. Burma. Chimili Alps. Farrer and Cox. 1183. Aug. 1919.

Primula declinis, Balf. f. et Forrest.

Robusta et florosa. Folia ad 20 cm. longa; lamina lanceolata tenuiter dentato-crenulata in petiolum aequilongum rubrum sulcatum attenuata subtus albida. Scapus robustus folia saepe duplo superans umbellam ad 20-floram nunc verticillum inferum gerens; bracteae e basi lata linearis-subulatae involucrantes; pedicelli ad 2 cm. longi sub fructu ad 6 cm. Calyx viridi-angulatus vix ad trientem fissus; lobi ovati eglandulosi. Corollae tubus calycem fere triente superans. Genitalia longa fere exserta, brevia calycis tubo breviora. Species *P. decurvae*, Balf. f. et Forrest, *P. reflexae*, Petitm., *P. szechuanicae*, Pax, affinis.

S.W. Szechwan. Mu-li Mts., valley of the Litang. Forrest. 16,290. June 1918.

Primula decurva, Balf. f. et Forrest.

Robusta. Folia papyracea ad 12 cm. longa; lamina ovalis vel oblongo-ovalis 2-3 cm. lata dentato-crenulata in petiolum aequilongum attenuata; subtus pallide grisea. Scapus foliis duplo longior umbellam ad 8-floram gerens; bracteae ovatae longe acuminatae pedicellos superantes; pedicelli raro 1 cm. longi. Calyx pallide viridis; lobi lanceolato-acuti glandulosociliati. Corollae lacteae tubus calycem triente vel quadrante superans; lobi ad 4 mm. lati integri vel emarginati. Species ex phyle *P. szechuanicae*, Pax, *P. orbicularis*, Hemsl., *P. reflexae*, Petitm.

Eastern N.W. Yunnan. Mts. of the Chungtien plateau. Forrest. 12,551. June 1914.

Primula densa, Balf. f.

Species parva pulvinata. Folia petiolata ad 3.5 cm. longa; lamina cordato-ovata obtusa ad 2 cm. lata crenulato-lobata; supra rugosa glandulosa; subtus venae pilosae; petiolus hirsutus. Scapus ad 6 cm. altus glandulosus et sparsim pilosus; umbella solitaria ad 6-flora; bracteae virides oblongae pedicellis breviores glandulosae; pedicelli validi ad 1 cm. longi glandulosi. Calyx apertus campanulatus vix ad medium 5-lobus; lobi ovati.

Corolla roseo-suffusa luteo-oculata annulata; tubus calycem dimidio superans; limbus 1.5 cm. diam.; lobi obovati emarginati. Stylus longus ad os corollae attingens. Species Sectionis Obconico-Listeri.

N.E. Upper Burma. Ward. 3536.

Primula firmipes, Balf. f. et Forrest.

Luteoflora ubique pilis brevibus farini-potentibus sparsim obtecta. Folia longe petiolata ad 16 cm. longa; lamina papyracea ovata vel elliptica ad 5 cm. longa 2.5 cm. lata cordata crenulato-serrata; subtus glauca. Scapus rigidus ad 16 cm. longus umbellam 4-5-floram floribus fragrantibus gerens; bracteae vix 1 cm. longae subfoliaceae virides cucullatae denticulatae; pedicelli stricti erecti ad 3.5 cm. longi. Calyx ad 7 mm. longus angulatus intus flavid-farinosis ad medium fissus; lobi erecti a basi lanceolati apice tuberculati. Corolla circ. 2.5 cm. longa; tubus infundibuliformis in limbum concavum farinosum ampliatus exannulatus; lobi suberecti obovati. Genitalia longiora calycem superantia. Semina laevia. Species ad Sectionem Sikkimensem forsitan referenda.

S.E. Tibet. Tsarong. Salween—Kiu-chiang divide. Forrest. 18,899. July 1919.

Primula flexilipes, Balf. f. et Forrest.

Luteoflora. Folia longe petiolata ad 18 cm. longa; lamina papyracea ovalis vel oblongo-ovalis nunc subrotundata ad 6 cm. longa 3 cm. lata cordata grosse crenulata; utrinque viridis et pilis farini-potentibus obtecta. Scapus subtenus ad 36 cm. longus superne flavid-farinosis; umbella ad 8-flora floribus nutantibus fragrantibus; bracteae virides oblongae acuminatae vel apiculatae subdenticulatae circ. 1.2 cm. longae; pedicelli filiformes flexiles farinosi ad 2.5 cm. longi. Calyx circ. 5 mm. longus farinosus angulatus ad medium fissus; lobi lanceolati acuti recurvi. Corollae circ. 2 cm. longae tubus infundibuliformis extus farinosus in limbum concavum intus farinosum ampliatus exannulatus; lobi suberecti obovati. Genitalia longiora calycem superantia. Species in Sectionem Sikkimensem pertinens et ad *P. firmipedem* arcte accedens.

S.E. Tibet. Tsarong. Salween—Kiu-chiang divide. Forrest. 18,874. July 1919.

Primula humicola, Balf. f. et Forrest.

Tenuis humicola stolonifera, stolonibus inter muscos laxos late patentibus. Folia petiolata ad 16 cm. longa 1-2 a queaque gemma exaequata; lamina cordato-palmatifida 7-loba circ. 6-7 cm. diam. lobis acutis irregulariter dentatis; utrinque plus

minusve molliter pilosa ; petiolus villosus. Scapus folia breviter superans plus minusve pilosus ; umbella solitaria 2-4-flora ; bracteae lanceolatae acuminatae ; pedicelli filiformes pubescentes ad 1.3 cm. longi. Calyx cum tubo corollae glandulis minutissimis conspersus subpatens rubro-tinctus circ. 7 mm. longus ad medium fissus ; lobi lanceolati. Corollae roseae exannulatae circ. 2 cm. longae tubus calycem duplo superans ; lobi obcordati. Genitalia longiora ad os corollae attingentia. In Sectione Geranioide juxta *P. alsophilam*, Balf. f. et Farrer ponenda.

S.E. Tibet. Tsarong. Ka-gwr-pw. Forrest. 14,236. July 1917.

Primula hymenophylla, Balf. f. et Forrest.

Humicola. Folia longe petiolata erecta ad 16 cm. longa ; lamina membranacea cordato-orbicularis vel elliptica ad 7 cm. diam. profunde 11-loba lobis obtusis 2-3-dentatis dentibus vix apiculatis ; utrinque concolor glandulis conspersa et pilis praecipue ad venas induta ; petiolus plus minusve villosus. Scapus ad 28 cm. altus sparsim pubescens ; umbella ad 5-flora ; bracteae lanceolatae ; pedicelli sub anthesi stricti pubescentes ad 2 cm. longi bracteas multo superantes. Calyx campanulatus costatus glandulosus puberulus ad medium vel ultra fissus ; lobi a basi lanceolati. Corollae ad 2 cm. longae purpureae tubus annulatus extus puberulus. Genitalia longiora ad os corollae. Species ex affinitate *P. lichiangensis*, G. Forrest.

S.E. Tibet. Tsarong. Doker-la. Forrest. 16,794. July 1918.

Primula junior, Balf. f. et Forrest.

Parva leviter griseo-farinosa. Foliorum lamina ovalis vel obovalis sub anthesi ad 4 cm. longa 1.5 cm. lata apice rotundata dentato-crenulata. Scapus tenuis brevis ad 10 cm. longus folia superans subtiliter farinosus umbellam biforam erectam vel subnutantem gerens ; bracteae linearis-acuminatae pedicellos aequantes ; pedicelli vix 5 mm. longi. Calyx vix 1 cm. longus ad medium fissus ; lobi acuminati. Corollae tubus calycem duplo superans ; stylus longus ad annulum conspicuum attingens. Stamina longiora ad os corollae inserta. Species inter formas *P. calliantha*, Franch. proximas in Sectione Nivali ponenda.

Yunnan. Forrest. 14,228.

Primula kiuchiangensis, Balf. f. et Forrest.

Luteo-farinosa ad 17 cm. alta. Folia ad 6 cm. longa ; lamina ovalis vel oblonga ad 1.8 cm. lata obtusa vel apice rotundata dentato-crenata in petiolum alatum vix discretum attenuata. Scapus validus ad 9 cm. longus umbellam ad 5-floram gerens ; bracteae a basi lata subulatae vix 6 mm.

longae pedicellos aequantes. Calyx viridis ad medium fissus; lobi acuti ad 1 cm. longi. Corollae pallide purpureo-cyaneae ad 2.5 cm. longae tubus calycem multo excedens. Genitalia longiora ad annulum attингentia. Capsula 1.3 cm. longa 2.5 mm. diam. pedicellis ad 2 cm. auctis. Species Sectionis Nivalis ex affinitate *P. petraeae*, Balf. f. et Forrest.

S.E. Tibet. Tsarong. Salween—Kiu-chiang divide. Forrest.
18,898. June—July 1919.

Primula lepta, Balf. f. et Forrest.

Parva delicata rosulata foliis floribusque coactaneis sub anthesi basi perulis alabastri cincta. Folia tenuia papyracea plerumque oblanceolata in petiolum alatum gradatim attenuata, nunc parte laminari distincta oblongo-ovali vel oblonga breviter et cuneatim in petiolum angustata, ad 4.5 cm. longa 1 cm. lata plerumque minor, apice rotundata vel obtusa, margine crenato-dentata ciliata; supra pallide viridis breviter pubescens; subtus glauca laevis subnitida plus minusve hirsuta; petiolum lamina dimidio brevior sed saepe longior, ciliatus. Scapus fragilis ad 9 cm. longus plerumque minor, plus minusve luteo-farinosis, capitulum parvum purpureo-coronatum florum deflexorum gerens; bracteae inferiores linear-lanceolatae acutae virides (in juventute purpureae) calyce paullo longiores, ciliatae. Calyx campanulatus circ. 3 mm. longus intus dense luteo-farinosis, extus glandulis farini-potentibus conspersus, ad medium vel ultra 5-lobatus; lobi inaequales. Corolla intense purpureo-cyanea circ. 1 cm. longa tubulosa supra in limbum concavum intus farinosum expansa; lobi rotundati circ. 2 mm. longi obscure retusi vel denticulati. Stamina in flore brevistylo ad faucem tubi corollini inserta, in longistylo basim versus inserta; filamenta simulac antherae purpurea. Ovarium globosum operculo crustaceo coronatum; stylus brevis calyce multo brevior, longus tubum corollinum aequans; stigma latum discoideum. Species Sectionis Muscarioidis.

Eastern N.W. Yunnan. Mts. N.E. of Chung-tien. Forrest.
16,475. July 1918.

Primula leucantha, Balf. f. et Forrest.

Pulchra albiflora albo-farinosa. Folia lanceolata vel oblongo-ovalia ad 20 cm. longa 3.5 cm. lata obtusa undulata et dentibus hydathodalibus minutis marginata deorsum in petiolum alatum haud discretum attenuata; utrinque concoloria pilis farinipotentibus conspersa. Scapus robustus ad 38 cm. longus obscure pulverulentus ad apicem albo-farinosus umbellam plurifloram et verticillos inter se remotos gerens; bracteae filiformes; pedicelli tenues stricti patentes circ. 1.5 cm. longi bracteas

superantes. Calyx spadiceus campanulatus intus dense albo-farinous; lobi carinati lanceolato-acuminati. Corollae albae aureo-oculatae circ. 2 cm. longae tubus calycem superans; lobi obovati. Stamina floris brevistylia ad os corollae inserta. Species ex affinitate *P. Beesianae*, G. Forrest in Sectione Candelabra.

S.W. Szechwan. Tsarong. Muli Mts., valley of the Litang. Forrest. 16,255. June 1918.

Primula limbata, Balf. f. et Forrest.

Albo-farinosa, gemmae hibernaculo brevi, squamis suis sub anthesi a basi explanatis. Folia ad 10 cm. longa 3 cm. lata firma subcordiaceae anguste obovata acuta vel obtusa eroso-dentata in petiolum brevem vix discretum attenuata; subtus griseo-farinosa et farina alba dense limbata. Scapus robustus ad 16 cm. longus obscure farinosus umbellam plurifloram gerens; bracteae lineares; pedicelli tenues bracteas superantes. Calyx purpureus albo-farinous. Corolla violaceo-purpurea. Capsula cylindrica circ. 8 mm. longa. Species Sectionis Nivalis-verae.

Western N.W. Yunnan. Mekong-Salween divide. Forrest. 14,304. July 1917.

Primula maikhaensis, Balf. f. et Forrest.

Caespitosa luteo-farinosa foliis praeteritis dense vestita. Folia obovato-spathulata ad 4.5 cm. longa 1.5 cm. lata apice rotundato-obtusa leviter crenulato-dentata; supra atro-olivacea; subtus luteo-farinosa; petiolus alatus membranaceo-vaginatus. Scapus folia aequans obscure pulverulentus; umbella 2-3-flora; bracteae pulverulentae intus luteo-farinosa oblongae acutae; pedicelli bracteas vix superantes pulverulentii. Calyx ad medium fissus extus pulverulentus intus luteo-farinous; lobi oblongi obtusi. Corolla roseo-purpurea oculo viridi-flavido calycem duplo superans circ. 2 cm. longa exannulata; lobi obovati bilobulati. Genitalia longiora ad os corollae. Species Sectionis Yunnanensis.

N.W. Yunnan. N'Maikha-Salween divide. Forrest. 18,094. June 1919.

Primula metria, Balf. f. et Cooper.

Parva rosulata efarinosa. Folia longe petiolata ascendentia sub anthesi ad 3.5 cm. longa; lamina oblonga vel ovalis vel elliptica vel ovata vel subcordiformis ad 2 cm. longa 1.2 cm. lata, obtusa vel apice rotundata, margine crenato-dentata, basi abrupte contracta nunc cordata, vel in foliis oblongis cuneata et in petiolum attenuata, utrinque opaca et pilis albis mollibus articulatis densissime vestita, subtus pallidior; petiolus laminam aequans vel ea longior. Scapus circ. 6 cm. longus strictus

pubescens efarinosus spicam capituliformem floribus deflexis gerens; bracteae linearis-lanceolatae acutae; pedicellus 0. Calyx foliaceus cupuliformis ventricosus deflexus postice circ. 6 mm. longus extus glaber intus pilosus ultra medium 5-lobatus; lobi inaequales eciliati vel sparsim ciliati, posteriore maximo circ. 3 mm. lato obtuso vel subtruncato et denticulato. Corolla pallide caerulea vel alba ad 1.4 cm. longa; tubus cylindricus extus glaber circ. 7.5 mm. longus; limbus infundibuliformis intus copiose glanduloso-puberulus ad medium 5-lobatus; lobi cuneati truncati paullo emarginati. Stamina in flore longistyllo ad medium tubi corollini inserta, in brevistyllo ad os. Ovarium latum; stylus longus corollae tubum aequans, brevis calyx dimidio brevior; stigma discoideum depresso. Species Sectionis Muscarioidis.

Bhutan. Champa Pumthang. Cooper. 4042. 21st June 1915.

Primula micropetala, Balf. f. et Cooper.

Rosulata parva rhizomate brevi foliis floribusque coaetaneis sub anthesi foliis praeteritis cincta. Folia petiolata ad 5.5 cm. longa; lamina oblongo-ovalis ad 3 cm. longa circ. 1 cm. lata, apice obtusa vel rotundata, margine integra vel obscure crenato-dentata brevissime ciliata deorsum in petiolum gradatim attenuata; utrinque fere concolor pilis plurimis brevibus mollibus multicellularibus puberula; petiolus laminam aequans vel ea brevior anguste alatus deorsum in vaginam longam angustam membranaceam expansus. Scapus circ. 10 cm. longus viridis brevissime glanduloso-puberulus capitulum parvum florum deflexorum gerens; bracteae inferiores linearis-lanceolatae acutae membranaceae ciliatae. Calyx cupularis ventricosus deflexus extus intusque glanduloso-puberulus, ultra medium 5-lobatus; lobi inaequales ovales vel elliptici apiculati ciliati. Corolla cyanea circ. 1 cm. longa subcarnosa; tubus circ. 7 mm. longus extus glaber; limbus erectus anguste cupularis intus glaber; lobi 5 imbricati parvi obovati paullo emarginati circ. 2 mm. longi. Stamina in flore longistyllo infra medium tubi corollini inserta. Ovarium globosum operculo crustaceo coronatum; stylus longus fere exsertus; stigma capitatum. Species Sectionis Muscarioidis.

Bhutan. Champa Pumthang. Cooper. 4056. 20th June 1915.

Primula mystrophylla, Balf. f. et Forrest.

Caespitosa prostrata semperviridis ramosissima; rami ad 15 cm. elongati foliis scapisque praeteritis siccis dense induti. Folia parva cochleariformia circ. 2 cm. longa; lamina papyracea

elliptica vel orbicularis vel cordata crenata; supra atroviridis pilis glandulosis farini-potentibus conspersa; subtus luteo-farinosa; petiolus lamina duplo longior alatus pilis glandulis ut lamina conspersus. Scapus inter folia immersus erectus tenuis vix 1 cm. longus luteo-farinosus; bracteae exteriore duae involucratae late ovatae virides plus minusve luteo-farinosae, interiores minores; pedicelli vix 2 mm. longi. Calyx campanulatus corollae tubo brevior viridis plus minusve luteo-farinosus ad medium 5-lobatus; lobi elliptico-ovati obtusi minute glandulosi-ciliati. Corolla violacea; tubus circ. 7-9 mm. longus cylindricus extus glaber intus ad faucem glandulosi-puberulus, annulatus; limbus planus; lobi cuneati circ. 1 cm. longi bifidi. Stamina in flore longistyle infra (in brevistyle supra) medium tubi corollini inserta. Ovarium globosum operculo coronatum; stylus brevis calycis tubum aequans, longus calyce paullo longior et corollae tubo brevior. Capsula calyce inclusa. Semina brunnea papulata. Species Sectionis Dryadifoliae.

S.E. Tibet. Tsarong. Ka-gwr-pw. Forrest. 14,221. July 1917.

Primula nanobella, Balf. f. et Forrest.

Perpusilla radicibus basi erubescens habitu *P. bellae*, Franch. sed minor. Folia ad 8 mm. longa parvula spatulata; lamina orbicularis vel subrhomboidea ad 5 mm. diam. incisodentata dentibus recurvis subquadratis apiculatis vel crenata supra viridis subtus elevata-nervosa luteo-farinosa deorsum in petiolum brevem alatum laminam aequantem cuneatim attenuata. Scapus brevissimus ad 1 cm. longus plerumque foliis inclusus subtiliter luteo-farinosus uniflorus; bracteae 2 purpurascentes extus et intus plus minusve luteo-farinosae exterior elliptica vel oblonga ad 3.5 mm. longa apice denticulata interior minor saepe lanceolata obtusa; pedicellus nullus vel vix evolutus. Calyx campanulatus 4-6 mm. longus adpressus extus purpurascens sparsim luteo-farinosus intus pallidior dense luteo-farinosus, vix ad medium fissus, lobis inaequalibus late oblongis subquadratis vel rectangularibus apice latis apiculatis vel denticulatis. Corollae magnae intense purpureae tubus erubescens calycem aequans vel paulo superans extus glaber intus ad faucem pilis pulvinatim occlusus; limbi discus ad 2 mm. diam.; lobi imbricati ad 8 mm. lati obovati ad medium bifidi. Species Sectionis Bellae.

N.W. Yunnan. Likiang Range. Forrest. 2399. July 1906.

Primula pectinata, Balf. f. et Forrest.

Parva rosulata efarinosa sed foliis scapo bracteis pedicellis calyceque pilis brevibus farini-potentibus plus minusve praeditis.

Folia petiolata ad 4 cm. longa 1.5 cm. lata; lamina ovalis nunc rotundata petiolum subaequans pinnatum incisa in petiolum abrupte contracta, dentibus oblongis integris apiculatis brevissime ciliatis; subtus pallidior. Scapus ad 9 cm. longus; umbella ad 8-flora floribus secundis; bracteae filiformes pedicello longiores. Calyx angustus ultra medium fissus; lobi angusti acuminati. Corolla pallide caerulea calycem duplo superans; lobi obovati bilobulati. Species Sectionis Souliei ex affinitate *P. incisae*, Franch.

S.W. Szechwan. Mu-li Mts. Forrest. 16,805. Aug. 1918.

Primula petraea, Balf. f. et Forrest.

Flavido-farinosa caespitosa. Folia tenuia ad 6 cm. longa longe petiolata; lamina ovalis vel oblongo-ovalis ad 3 cm. longa 1 cm. lata apice obtusa vel rotundata dentato-crenata; subtus leviter farinosa. Scapus ad 8 cm. longus umbellam ad 10-floram (nunc paucifloram) gerens; bracteae ovato-acuminatae; pedicelli ad 1.5 cm. longi bracteis triplo longiores; anthopodium conspicuum. Calyx purpureus ad 8 mm. longus; lobi ligulati obtusi vel acutiusculi. Corollae pallide violaceo-roseae ad 2.5 cm. longae tubus annulatus calycem duplo superans; lobi obovati ad 8 mm. longi integri. Genitalia longiora intra os corollae. Capsula ad 2 cm. longa 2 mm. diam. pedicello aucto ad 4 cm. longo. Species Sectionis Nivalis *P. minori*, Balf. f. et Ward affinis.

N.W. Yunnan. Bei-ma-shan. Forrest. 13,940. June 1917.

Primula proba, Balf. f. et Forrest.

Leviter griseo-farinosa. Folia papyracea; lamina ovalis margine dentato-crenata obtusa vel rotundata. Scapus robustus subtiliter farinosus umbellam terminalem et verticillos 1-2 inter se remotos gerens; bracteae involucrantes acuminatae ad 1 cm. longae; pedicelli ad 2 cm. longi. Calyx ultra medium fissus; lobi subpatentes extus subtiliter farinosi. Corollae tubus calycem duplo superans. Species ex affinitate *P. callianthae*, Franch.

S.E. Tibet. Tsarong. Ka-gwr-pw. Forrest. 16,744. Aug. 1918.

Primula propinqua, Balf. f. et Forrest.

Elata leviter griseo-farinosa. Foliorum elongatorum lamina lanceolata sursum attenuata grosse crenulata. Scapus robustus elatus ad 30 cm. subtiliter farinosus umbellam ad 5-floram gerens; bracteae ad 1 cm. longae; pedicelli ad 3 cm. longi. Calyx ad 1.2 cm. longus tubum corollinum aequans circ. ad medium fissus;

lobi brunnei obtusi. Species Sectionis Nivalis ad phylum *P. callianthae*, Franch. spectans.

Yunnan. Forrest. 14,251. July 1917.

Primula pygmaeorum, Balf. f. et W. W. Sm.

Herba perennis minuta forsitan paludicola rosulata rhizomate brevi radices plurimas emittente foliorum vaginis et scapis praeteritis marcidis obtecto. Folia petiolata haud 2 cm. longa; lamina ab apice petioli horizontaliter patens crassa carnosula oblongo-ovalis ad extremitates attenuata circ. 5.5 mm. longa 2.5 mm. lata glabra obtusa, margine integra haud cartilaginea, basi in petiolum membranaceo-alatum angustata; petiolus lamina longior erectus in dimidio supero ligulatus. Scapus foliis immersus ad 6 mm. longus strictus glaber umbellam 3-floram gerens; bracteae glabrae involucratae oblongae vel ovales apice rotundatae nunc brevissime apiculatae circ. 1 cm. longae stramineae haud gibbosae; pedicelli stricti divaricati ad 2.5 mm. longi superne in anthopodium magnum expansi. Calyx tubulosus circ. 4 mm. longus glaber; tubus angulatus in lobos 5 erectos elongato-triangulares obtusos virides circ. 1.75 mm. longos fissus. Corollae in flore longistyllo tubus cylindricus circ. 5 mm. longus calycem paullo superans glaber crenulato-annulatus; limbi plani lobi circ. 2.75 mm. longi cuneati profunde bilobulati. Stamina medium tubi corollini versus inserta antherarum apicibus ab annulo 1.5 mm. remotis. Ovarium oblongo-ovoideum; stylus longus tenuis ruber exsertus; stigma ovoideum parvum stylo paullo latius.

Tibet. Khambjang. Younghusband. 18. July 1903.

Primula rigida, Balf. f. et Forrest.

Caespitosa flavidofarinosa. Folia firma oblongo-spathulata ad 5.5 cm. longa ad 1 cm. lata acuta integra vel subtiliter crenulata; subitus dense farinosa. Scapus validus rigidus foliis vix longior umbellam ad 8-floram gerens; bracteae purpureae lanceolatae acuminatae ad 7 mm. longae; pedicelli ad 1.5 cm. longi tenues. Calyx purpureus ad 1 cm. longus corollae tubo paullo brevior. Corolla pallide purpureo-rosea ad 2 cm. longa, lobi ovales crenulati. Capsula ad 1.5 cm. longa 2.5 mm. lata pedicello haud aucto. Species Sectionis Nivalis ex phyllo *P. petraeae*, Balf. f. et Forrest.

S.W. Szechwan. Mu-li Mts., valley of the Litang. Forrest. 16,280. July 1918.

Primula russeola, Balf. f. et Forrest.

Majuscula albo-farinosa hibernaculo sub anthesi disrupto squamis vaginalibus fibrosim decompositis. Folia elongata ad

30 cm. longa 5 cm. lata oblongo-ovalia vel ovalia obtusa nunc subrotundata minute dentata in petiolum longum membranaceum attenuata primo pallide viridia postea et sub anthesi russeta; subitus subtiliter albo-farinosa. Scapus crassus folia subaequans leviter farinosus; umbella pluriflora floribus fragrantibus; bracteae virides circ. 2.5 cm. longae efarinosa; pedicelli dense albo-farinosi bracteas subaequantes. Calyx brunneo-purpureus corolla brevior; lobi anguste oblongo-ovales intus dense albo-farinosi. Corolla saturate purpureo-rosea. Species Sectionis Nivalis-verae.

S.E. Tibet. Tsarong. Ka-gwr-pw. Forrest. 14,593. Aug. 1917.

Primula sataniensis, Balf. f. et Farrer.

Foliorum lamina cordiformis ad 6 cm. longa petiolum duplo superans profunde 10-12-lobata lobis obtusis et obtusatim dentatis utrinque sparsissime glandulosa et puberula; petiolus subvillosulus. Scapus folia multo superans; umbella ad 7-flora floribus fere sessilibus; bracteae foliaceae involucrantes. Calyx 5-vittatus. Corollae purpureo-rubrae tubus calycem longe superans. Species Sectionis Cortusoidis *P. lichiangensis*, G. Forrest affinis.

Kansu. Satánee and Gahoba Ranges. Farrer and Purdom. 61. 19th May 1914.

Primula shweli-calliantha, Balf. f. et Forrest.

Foliorum lamina ovalis vel oblongo-ovalis integra vel tenuiter crenulata. Scapus folia vix superans; umbella 3-5-flora erecta; bracteae breves acutae vel obtusae; pedicelli bracteas multo superantes. Calycis lobi oblongi obtusi vel truncati apice denticulati. Corollae tubus calycem dimidio superans annulo bene evoluto. Species haec Sectionis Nivalis est forma occidentalis *P. callianthae*, Franch. cuius typus in montibus circum Tali invenitur.

Western Yunnan. Shweli-Salween divide. Forrest. 17,682. June 1918.

Primula sikuensis, Balf. f. et Farrer.

Planta umbratilis. Folia longe petiolata ad 14 cm. longa erecta; lamina cordato-elliptica vel reniformis circ. 4.5 cm. longa palmatiloba lobis 9 obtusis dentatis; utrinque glanduloso-pilosa; petiolus villosus. Scapus folia subaequans villosulus; umbella 5-7-flora; bracteae circ. 5 mm. longae oblongae immersae apiculatae villosulae; pedicelli circ. 2 cm. longi glanduloso-puberuli bracteas multo superantes. Calyx viridis

nervosus subvillosulus ad medium fissus. Corollae rubro-purpureae tubus calycem duplo superans. Species *P. lichiangensis*, G. Forrest affinis.

Kansu. Siku Range. Farrer and Purdon. 86. 1914.

Primula sinodenticulata, Balf. f. et Forrest.

Rhizoma crassum radicibus carnosulis foliis siccis anni praeteriti persistentibus floribusque praecocibus. Folia rosulata sub anthesi alabastri squamis rufo-brunneis basi circumscripta ad 8 cm. longa ad 2.5 cm. lata oblonga vel obovato-oblonga vel oblongo-spathulata membranacea obtusa margine leviter reflexa sinuata nunc obscure denticulata deorsum paullo angustata et ligulata perlucens, utrinque minutissime puberula, venis primariis a costa media rubro-tincta acute et stricte adscendentibus, post anthesin accrescentia ad 15 cm. longa ad 4 cm. lata vel majora. Scapus robustus ad 22 cm. (sub fructu ad 6 dm.) altus glaber apicem versus dense luteo-farinosis umbellam unam multifloram globosam gerens; bracteae 7 mm. longae membranaceae plus minusve luteo-farinose exteriore latae hastatae apicem versus subito in caudam ligulatam obtusam constrictae basi circum pedicellos cucullatae subauriculatae infra breviter gibbosae, interiores angustiores; pedicelli plus minusve luteo-farinosi 7 mm. longi bracteis aequilongi (anthopodio 3.25 mm. obconico excluso) stricti rigidi. Calyx 8.5 mm. longus membranaceus ultra medium fissus plus minusve farinosus tubo obconico; lobi 5 mm. longi lineari-ligulati acuti saepe purpurascentes acutissimi hydathodo conspicuo. Corollae limbus purpureus albo-oculatus; tubus extus erubescens ad 1.2 cm. longus angustus tubulosus non ampliatus intus exannulatus supra stamina transverse rugosus infra membranaceus venulosus; limbi pars integra vix 1 mm. longa; lobi magni obovati 1 cm. longi 6 mm. lati bipartiti. Floris brevistylili stamina supra medium corollae tubi inserta filamentis brevibus vix 1 mm. longis antheris 2 mm. longis apicibus ab ore 2.5 mm. remotis, longistylili infra medium tubi corollini inserta apicibus antherarum 4.5 mm. ab ore remotis. Ovarium globosum vertice operculatum incrassatum; stylus ruber longus tenuis calycis lobos aequans, brevis calycis lobis multo brevior; stigma parvum cylindricum rubrum. Capsula ad 6 mm. longa anguste oblongo-ovoidea calycem albidum membranaceum aequans (placenta globosa stipitata) ab apice valvis crustaceis lanceolatis dehiscens. Semina brunnea .5 mm. longa; testa cellulis aeriferis rugosa. Species ex phylo *P. denticulatae*, Sm.

Mid W. Yunnan. Tali Range. Forrest. 1801. May 1906.

Primula sinonivalis, Balf. f. et Forrest.

Species Sectionis Nivalis habitu et forma hibernaculi ad *P. limbatum*, Balf. f. et Forrest spectans a qua facile distinguitur; foliis tenuioribus papyraceis majoribus ad 14 cm. longis 4 cm. latis apice plerumque rotundatis leviter regulariter dentato-crenulatis subtus sparsim glandulis farini-potentibus praeditis haud limbatis.

Western N.W. Yunnan. Mekong-Salween divide. Forrest. 14,217. July 1917.

Primula sinoplagaginea, Balf. f.

Species Sectionis Nivalis floribus paullo praecocioribus, squamis membranaceis vaginalibus rubescens hibernaculi recti ad 5 cm. longi sub anthesi persistentibus. Folia lanceolata acuta in petiolum alatum membranaceum attenuata obscure crenulata; subtus leviter flavid-farinosa. Scapus crassus ad 16 cm. longus folia paullo superans leviter flavid-farinosus umbellam plurifloram gerens; bracteae atropurpureae intus farinosae a basi lata acuminatae pedicellos farinosos ad 2 cm. longos superantes vel subaequantes. Calyx atropurpureus tubum corollinum latum plerumque subaequans ad medium vel ultra fissus. Corolla saturate purpurea. Genitalia longiora plerumque calycem aequantia.

N.W. Yunnan. Bei-ma-shan. Forrest. 16,440. July 1918.

Primula sinopurpurea, Balf. f.

Species Sectionis Nivalis floribus et foliis coactaneis vel floribus paullo praecocioribus hibernaculi squamis sub anthesi a basi explanatis. Folia ad 28 cm. longa 4 cm. lata subcarnosula oblongo-ovalia obtusa vel acuta subintegra vel obscure crenulato-denticulata in petiolum alatum aequilongum vel breviorem attenuata; subtus plus minusve aureo-farinosa. Scapus crassus ad 40 cm. longus praecipue apicem versus aureo-farinosus; umbella pluriflora; bracteae a basi lanceolatae acuminatae pedicellis dense aureo-farinosis ad 2.5 cm. longis multo breviores. Calyx brunneus vel brunneo-purpureus ad medium vel ultra fissus intus aureo-farinosus tubo corollino brevior. Corolla saturate purpurea. Genitalia longiora calycem superantia nunc tubum corollinum subaequantia.

Mid and N.W. Yunnan. Tali to Chungtien and the Mekong-Salween divide. Delavay. 750, 751. May 1884. Forrest. 2128. May 1906.

Primula stragulata, Balf. f. et Forrest.

Caespitosa stragulum densum compactum rosularum florentium faciens, efarinosa sed ubique glandulis farini-potentibus

minute roridula. Folia petiolata vix 1 cm. longa; lamina petiolum aequans ad 4 mm. lata supra medium profunde incisa infra medium integra cuneatim in petiolum attenuata, pallide viridis utrinque concolor. Scapus tenuis circ. 1.5 cm. longus (sub fructu auctus) uniflorus rarissime biflorus bracteas 2 parvulas inaequales apicem versus gerens; pedicellus fere nullus. Calyx purpurascens ad medium fissus; lobi oblongi apiculati univenii. Corolla saturate purpureo-rosea circ. 1.5 cm. longa; tubus intus barbatus calycem duplo superans; limbus patens; lobi bipartiti. Genitalia longiora ad os corollae. Species Sectionis Bellae.

S.E. Tibet. Tsarong. Salween—Kiu-chiang divide. Forrest. 18,893. Aug. 1919.

Primula tribola, Balf. f. et Forrest.

Rhizoma longum hibernaculo gemmae bulboso. Folia ad 13 cm. longa 2.5 cm. lata oblongo-ovalia apice rotundata undulato-crenulata in petiolum attenuata; supra atroviridia nitentia; subtus flavid-farinosa costa media rubro-purpurea. Scapus folia aequans; umbella 2-4-flora; bracteae vix 5 mm. longae ovatae; pedicelli stricti ad 1.5 cm. longi. Calyx atropurpureus intus farinosus. Corollae roseo-purpureae griseo-flavid-oculatae tubus calycem duplo superans; lobi obovati bifidi apiculo prominulo. Capsula ovoidea circ. 1 cm. longa calycem duplo superans. Species e phylo *P. callianthae*, Franch.

Western N.W. Yunnan. Mekong-Salween divide. Forrest. 18,164. July 1919.

Primula triloba, Balf. f. et Forrest.

Herba parvula efarinosa glandulosa vix 2 cm. alta pulvinatim ad 1 dm. patens. Ramuli breves foliis praeteritis siccis dense vestiti. Folia vix 1 cm. longa late petiolata; lamina circ. 3.5 mm. longa et lata petiolo multo brevior ad medium triloba lobis ovatis obtusis subcarnosula utrinque laete viridis et pilis brevibus farini-potentibus conspersa margine pilis longis glandulosis ciliata; petiolus ligulatus membranaceus. Flores immersi. Scapus brevis circ. 3 mm. longus glandulos-pilosus unibracteatus; bractea linearis acuta uninervia glandulos-pilosa. Calyx viridis glandulos-pilosus ultra medium 5-lobatus; lobi lanceolati acuti vel acuminati. Corolla rosea luteo-oculata in flore longistylo circ. 1.3 cm. longa; tubus latus extus glandulos-pilosus intus ad faucem dense pulvinatim villosus; lobi obcordati profunde bifidi segmentis obtusis. Stamina in flore longistylo ad basim tubi corollini inserta. Ovarium globosum; stylus

longus tubum corollinum subaequans ; stigma capitatum inter pilos faucis prolatum. Capsula calyce ex toto inclusa ad apicem crustacea ibique valvis 5 brevibus dehiscens, infra membranacea. Semina minutissima. Species Sectionis Bellae.

S.E. Tibet. Tsarong, on the Londre-shan. Forrest. 16,878. Aug. 1918.

Primula tsarongensis, Balf. f. et Forrest.

Rosulata foliis floribusque coaetaneis. Folia petiolata ad 20 cm. longa erecta ; lamina papyracea lanceolata vel elongato-lanceolata circ. 12 cm. longa 2.5 cm. lata, apice rotundata et cum margine crenulato ciliata, deorsum in petiolum longe attenuata ; supra opaca puberula ; subtus pallidior subglauca glabra (costa media basi pilis paucis albis conspersa excepta) ; petiolus lamina paullo brevior alatus sparsim pilosus. Scapus validus erectus ad 40 cm. longus luteo-farinosis (sub inflorescentia densius) spicam crassam pileo purpureo florum juvenilium coronatam gerens ; flores deflexi ; bracteae inferiores ligulatae . vel lanceolatae calycem subaequantes plus minusve luteo-farinosae glanduloso-ciliatae ; pedicelli nulli ; anthopodium nullum. Calyx campanulatus ventricosus circ. 4 mm. longus deflexus luteo-farinosis ultra medium 5-fissus ; lobi glandulosociliati. Corolla intense purpureo-caerulea tubulosa cylindrica circ. 1.3 cm. longa extus glabra ; limbus infundibuliformis efarinosus ; lobi erecti circ. 1.5 mm. longi obovati vel subquadратi paullo emarginati. Stamina in flore brevistyllo ad faucem tubi corollini inserta. Ovarium globosum operculo crustaceo coronatum ; stylus brevis calycem subaequans ; stigma discoideum depresso. Species Sectionis Muscarioidis.

S.E. Tibet. Tsarong. Ka-gwr-pw. Forrest. 14,805. Sept. 1917.

Primula umbratilis, Balf. f. et Cooper.

Parva rosulata foliis floribusque coaetaneis. Folia petiolata ad 9 cm. longa (sub fructu longiora) ; lamina oblonga vel sub-elliptica ad 4 cm. longa 2 cm. lata, apice obtusa vel rotundata, margine arcta et breviter lobulata, lobulis rotundatis vel dentiformibus, basi subtruncata et subcuneatim in petiolum angustata ; supra rugulosa atroviridis ; subtus vix pallidior reticulatim alveolaris ubique hirsuta pilis strictis glutinosis ; petiolus pilosus paullo alatus laminam subaequans vel ea longior. Scapus circ. 8 cm. longus (sub fructu ad 12 cm.) tenuis atroviridis pilis strictis pilosus efarinosus capitulum brunneo-coronatum parvum 5-6-florum floribus deflexis gerens ; bracteae inferiores circ. 5 mm. longae ligulatae virides. Calyx cupularis deflexus

ventricosus extus glaber intus plus minusve farinosus 5-partitus; lobi glandulosi-ciliati. Corolla pallide purpurea circ. 1.5 cm. longa; tubus angustus intus glaber, extus apicem versus glandulis farini-potentibus indutus, supra in limbum aperte infundibuliformem intus glabrum expansus; lobi rotundati circ. 4 mm. longi adscendentibus emarginati obscure denticulati. Stamina in flore brevistyllo ad faucem tubi corollini inserta antheris fere exsertis, in longistyllo infra medium calyce breviora; antherae luteae. Ovarium globosum; stylus brevis ad medium tubi corollini attingens, longus tubum aequans; stigma magnum capitatum. Capsula pallide ochracea laevis calyce inclusa circ. 4.5 mm. longa ab apice valvis 5 per partem superiorem crustaceam dehiscens. Species Sectionis Muscarioidis.

Bhutan. Kurmathang Pumthang. Cooper. 2134. 24th Sept. 1914.

Omphalogramma Coxii, Balf. f.

Folia petiolata oblongo-cordiformia utrinque glandulosa et pilis elongatis glanduliferis obtecta margine undulata; petiolus dense pilosus. Scapus brevis ad 12 cm. longus ante folia evolutus pubescens. Calyx pubescens circ. 1.2 cm. longus 6-partitus; lobi attenuatim ligulati. Corolla purpureo-kermesina parva ad 3 cm. longa; lobi vix 7 mm. longi ovato-rotundati apice dentati. Staminum filaments glandulosa. Stylus glaber. Species *O. Delavayi*, Franch. affinis.

N.E. Burma. Chimili Alps. Farrer and Cox. 1187. Aug. 1919.

Omphalogramma Farreri, Balf. f.

Folia petiolata rotundato-cordiformia; lamina ad 10 cm. diam. glandulosa et sparsim pilosa (ad venas infra dense); petiolus ad 16 cm. longus dense lanatus. Scapus robustus circ. 16 cm. longus ante folia evolutus pubescens. Calyx circ. 1.7 cm. longus viridis pubescens 6-partitus; lobi ligulati. Corolla saturate purpurea ad 5 cm. longa; lobi circ. 1.5 cm. longi ovales dentati. Staminum filaments glandulosa. Stylus basi glandulosus pilosus. Species *O. Delavayi*, Franch. affinis.

N.E. Upper Burma. Hpimaw and Chimili High Alps. Farrer and Cox. 1053, 1169. June 1919.

Omphalogramma Forrestii, Balf. f.

Planta floribus cum foliis nascentibus et gemmae hibernaculo magno. Foliorum haud pubescentium lamina ovata vel oblongo-elliptica cordulata abrupte et longe petiolata. Scapus longus.

Flos magnus subzygomorphus. Corollae ad 7 cm. longae tubus flavidus; limbus saturate purpureus; lobi leviter crenulati. Staminum filamenta glandulosa. Stylus glaber. In Sectione *Omphalogramma* *O. Souliei*, Franch. (*Primulae Franchetii*, Pax) proxima.

Eastern N.W. Yunnan. Mts. of the Chungtien plateau. Forrest. 10,666. July 1913.